

REMARKS

I. SUMMARY OF OBJECTIONS/REJECTIONS

A. Reconsideration and Allowance

Reconsideration and allowance of the above-identified application is respectfully requested. The Applicants note with appreciation that the Examiner has acknowledged each of the prior art references cited in the information disclosure statements filed on June 22, 2005, and March 8, 2006. The drawings, specifically FIGS. 22-25, have been objected to by the Examiner because they do not include the legend "Prior Art." Replacement sheets accompany this response and drawings 22-25 have been corrected to include the designation "PRIOR ART." The title has been objected to by the Examiner as not being descriptive. As indicated above, the title has been amended to be more descriptive. The Applicants further note with appreciation the acknowledgement of the claim for foreign priority made under 35 U.S.C. § 119. Claims 1-6 remain pending.

B. Rejection of Claims 1 -6 Under 35 U.S.C. § 102(e)

Claims 1-6 are rejected under 35 U.S.C. § 102(e) as being anticipated by U.S. Patent No. 6,992,734 to Morishita et al. (hereinafter "Morishita"). These rejections are respectfully traversed.

Specifically, the Applicants respectfully submit that Morishita fails to disclose the specific features of the embodiments of the present invention for a frame assembly for a liquid crystal display device.

In particular, the Applicants submit that Morishita fails to disclose all of the features recited in independent claim 1, including the feature of reinforcing frames that are joined at outer corners to form a picture frame to encase an optical member.

Rather, Morishita merely discloses a *unified singularly constructed* second housing (2) to which is attached a liquid crystal display.

II. DISCUSSION OF APPLICANT'S INVENTION

The embodiments of the present invention relate to a frame for a liquid crystal display, and more particularly, to reinforcing frames that are joined at outer corners to form a picture frame to encase an optical member.

Typical liquid crystal display devices generally consist of 1) a liquid crystal display panel that displays images, 2) an optical member made from the laminated body of a diffusion plate, 3) a light-collecting sheet material provided on the rear surface of the liquid crystal display panel, 4) a backlight unit disposed on the rear surface of the optical member, 5) a main body case that houses and holds the backlight unit, and a metal case for shielding the liquid crystal display panel, and the like.

In this type of liquid crystal display device, the size and weight of each component constituting the device increases as the display screen is made larger, such that mechanical torsion or bending of each component and during the assembly of such components occurs, which inevitably adversely affects the quality of display.

Accordingly, a first aspect of the present invention provides for a liquid crystal display device characterized in that it comprises a U-shaped main body case having opposing side walls and other open portions and a relatively wide bottom wall, a

backlight unit housed in the main body, and an optical member made to reside on the surface of each side wall of the main body case while covering the backlight unit, in which the optical member is placed on the surface of both side walls of the main body case housing the backlight unit, and its outer periphery is enclosed by reinforcing frames joined at the corners thereof in the form of a picture frame.

This aspect of the invention assumes that in the case of typical larger liquid crystal display devices, the components involved are also larger and heavier, such that twisting and distortion thereof and the like easily occur in a normal frame (which is a previously integrally formed frame), during vibration and the like, since the frame cannot firmly hold the components together, and therefore the possibility of occurrence of a large slippage and the like arises in the optical member. However, the use of the above-described reinforcing frames makes it possible to firmly assemble the optical member, the backlight unit and the like to the main body case, despite being large and heavy. In addition, since the divided reinforcing frames are joined directly, providing for corner members with which to connect them is unnecessary. Further, even though the frame consists of a plurality of frames, the unit price of each component is lower while enhancing dimensional accuracy thereof, thereby ensuring lower cost and robustness.

Further, in this aspect of the invention, it is preferable that the optical member has a light leakage preventive structure where the surface side edge of its outer periphery is covered by the reinforcing frames, and the joints of the reinforcing members are respectively provided with a light leakage preventive structure where the end portions of the reinforcing frames come into contact to each other.

In addition, the gaps forming in the joints between components are sealed to prevent the leakage of light and the intrusion of foreign objects such as dirt and dust.

Further, it is preferable that a thick and transparent reinforcing plate be disposed on the rear surface of the optical member.

Further, since the transparent and thick reinforcing plate is provided at the opening of the main body case 3 and affixed to the reinforcing frames, the reinforcing plate does not become shaky, promoting robustness of the lighting system, and matching with the liquid crystal display panel becomes better.

Further still, it is preferable that the liquid crystal display panel be affixed to an assembled liquid crystal display device by means of the reinforcing frames and attached to the main body case by means of the outer frame divided into a number of frames.

Likewise, in this aspect of the invention, by constituting the outer frame in the shape of a picture frame covering the periphery of the liquid crystal display panel, in divided frames, no gap is required to be provided between the outer frame and the supporting means for affixing the same, and thus stress-causing distortion in the outer frame will not occur when it is affixed to the supporting means by screws and the like. In this manner, any adverse effect to the quality of display of the display panel due to the occurrence of stress may be avoided. Further, when the outer frame is formed by die-cutting a plate material from metal plate material, the amount of waste material is drastically reduced, thereby cutting production cost. Additionally, when the liquid crystal display panel is constituted in rectangular form, different plate materials of varied sizes can be used to produce the upper and lower outer frames and the right and left outer frames, and thus the amount of waste material after die-cutting the plate material is reduced, and production cost can thus be scaled down further. Further, still, by connecting the outer frames to each other after being affixed to the supporting means, the outer frames and the supporting means are securely fixed without any clearance, as to prevent the frames from being deformed due to the presence of such clearance.

Further, it is preferable to provide for a lamp-supporting stage for the backlight unit at the open end of the main body case and a middle member on the lamp-supporting

stage, and to affix the optical member to the main body case by means of the reinforcing frames.

Further still, it is preferable that the side walls of the main body case and the side walls of the middle member be made to form a chamber of a predetermined size by creating a periphery for each side wall, housing the backlight unit in the chamber, and installing the outer periphery of the assembly to the reinforcing frame after providing for peripheral ends for the optical member on each side wall, so that the different components of the liquid crystal display device such as the main body case can be solidly constructed and the optical member can be firmly affixed to the main body case. In this manner, it would be possible to remove the backlight unit easily from the assembly without dismantling the optical member on purpose.

III. DISCUSSION OF THE CITED ART

Morishita discloses liquid crystal display device consisting of components that allegedly simplify maintenance of liquid crystal display units mounted on computers, display monitors therefore or televisions, and preferably for enabling to omit positional adjustment of a light source unit and a liquid crystal display panel during the maintenance of the liquid crystal display device. Morishita provides a liquid crystal display device comprising first, second and third housings, a liquid crystal display panel fixed between the first and second housings (2), a light source (cold-cathode fluorescent tubes) fixed to the third housing, the second and third housings being detachable to one another, being constructed by overlapping the first, second and third housings with each other, wherein a timing-converter board fixed to an opposite side surface of the third housing to a side surface to which the light source is fixed, and protrusions formed on the opposite side surface so as to determine a maximum thickness of the liquid crystal display device.

IV. DISCUSSION OF THE REJECTIONS UNDER 35 U.S.C. §102(e)

Regarding the 35 U.S.C. § 102(e) rejections, it is well known that “[a] claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference.” *Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987).

A. Rejection of Claim 1

Respectfully, the Applicants submit that Morishita fails to disclose each and every feature of independent claim 1. Claim 1 includes the claim feature of “reinforcing frames that are joined at corners to form a picture frame.” Respectfully, the Applicants submit that Morishita fails to disclose the claim feature of reinforcing frames that are joined at corners to form a picture frame.

The Office Action cites Morishita as allegedly disclosing, among other features, an outer periphery of an optical member being encased by reinforcing frames (2) that are joined at corner (23) to form a picture frame. The Applicants respectfully submit that the Examiner has mis-interpreted the disclosure of Morishita.

The Applicants respectfully direct the Examiner’s attention towards FIG. 1, and the following passages taken from Morishita:

In FIG. 1, the reference numeral 1 designates a first housing, 2 second housing 2, 3 a third housing, 4 a liquid crystal display panel, 5 an optical sheet (a diffusion film on an optical source side, and a prism film on a display panel side), 61 cold-cathode fluorescent tubes, 7 a timing-converter board, 8 a light source control circuit board constituting a light source control circuit, 11 an opening (liquid crystal display window) of the first housing 1, 21 an opening of the second housing, 13 a hole in the first housing 1, 23 holes in the second housing 2, 14 notches

(notches bent and fixed) on the first housing 1, 24 projections on the second housing 2, 22 a terrace on the second housing 2, 64, 65 frames, 641, 651 rubber bushes, 43 a flexible printed circuit board, 62 connectors (high voltage side), 63 connectors (low voltage side), 41 a gate drive IC, and 42 a drain drive IC.
[Morishita, col. 4, lines 23-37 (emphasis added)]

and further,

The liquid crystal display panel 4 is received between the first housing 1 and the second housing 2 in a state, in which the second housing 2 is covered by side surfaces of the first housing 1 when the both housings are put together. The holes 13 in the first housing 1 and the holes 23 in the second housing 2 are formed so as to be substantially aligned in position when the liquid crystal display panel 4 is held between these housings. Threads are formed on inner walls of at least one of the holes 13 and the holes 23. First, screws are passed through the corresponding holes 23 from the four holes 13 (two on the III-side and two on the V-side in FIG. 1) on the side surfaces of the first housing 1 to loosely fix the first housing 1 and the second housing 2 to each other.
[Morishita, column 8, line 58 through column 9, line 3 (emphasis added)]

The Applicants respectfully submit that what the Examiner took to be corners of a joined frame (2) are actually threaded screw holes used to affix first and second housings together. A study of housing (2) in FIG. 1 shows that housing (2) is not comprised of a plurality of reinforcing frames joined together at corners to encase the optical member, as recited in Applicants' claim 1. Instead, housing (2) is of unitary construction. Furthermore, the disclosure of Morishita supports this conclusion:

One of the upper and lower surfaces of the liquid crystal display panel 4 must have light from the light source unit

being incident upon a liquid crystal layer provided therein, and the other of the upper and lower surfaces must display an image, which is generated by modulation of the light at the liquid crystal layer, to a user of the liquid crystal display device. Because of this, the first housing 1 and the second housing 2 are formed with openings (for example, *the opening 11 of the first housing 1 shown in FIG. 3A*) along the surface (the main surface of one of the substrates 441, 442 contained in the panel) of the liquid crystal display panel 4.

[Morishita, column 14, line 64 through column 15, line 8 (emphasis added)]

The formed opening 11 implies a cut-out portion of large pieces of sheet metal that are stamped to form first and second housings (1, 2). The Applicants respectfully submit that it is noteworthy that the Examiner does not particularly point out where Morishita discloses that housing (2) is fabricated from two or more reinforcing frames. The Applicants respectfully submit that Morishita fails to disclose that housing (2) is fabricated from two or more constituent components.

Therefore, since Morishita fails to disclose every feature of claim 1, Morishita cannot anticipate claim 1 of the present invention, and it is respectfully suggested that this rejection be withdrawn.

B. Rejection of Claims 2-6

Furthermore, regarding claims 2 through 6, the Applicants respectfully submit that since it has been shown that Morishita fails to disclose all of the features of claim 1, and since claims 2 through 6 depend from claim 1, the rejection of claims 2 through 6 under 35 U.S.C. § 102(e) should be withdrawn.

C. Rejection of Claim 3

Respectfully, the Applicants submit that Morishita fails to disclose each and every claim feature of dependent claim 3. Claim 3 includes the claim feature of “the joints of

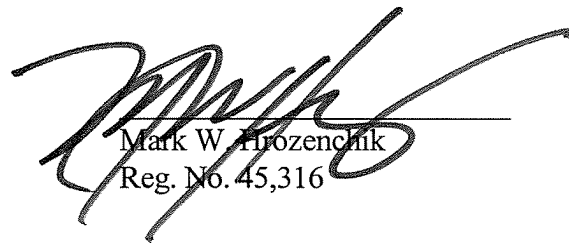
said reinforcing frames are provided with light leakage preventive structures where the end portions of the reinforcing frames come into contact to each other.” Respectfully, the Applicants submit that Morishita fails to disclose the feature of providing light leakage preventive structures at the joints of the reinforcing frames, because, as discussed above, Morishita fails to disclose a housing (2) that comprises reinforcing frames and therefore cannot have joints. Instead, Morishita’s housing (2) is fabricated from a single piece of sheet metal. Therefore, since Morishita fails to disclose every feature of claim 3, Morishita cannot anticipate claim 3 of the present invention, and it is respectfully suggested that this rejection be withdrawn.

V. CONCLUSION

In view of the above, it is believed that the application is in condition for allowance and notice to this effect is respectfully requested. Should the Examiner have any questions, the Examiner is invited to contact the undersigned at the telephone number indicated below.

It is believed that no fees are due in the filing of this response. However, should additional fees be deemed necessary to maintain pendency of this application under 37 CFR §§ 1.116 and 1.117, the Commissioner is hereby authorized to charge any, or credit any overpayments, to Deposit Account No. 50-1710.

Respectfully submitted,



Mark W. Frozenchik
Reg. No. 45,316

Patent Administrator
KATTEN MUCHIN ROSENMAN LLP
1025 Thomas Jefferson St., Suite 700
Washington, DC 20007-5201
Telephone: (202) 325-3500
Facsimile: (202) 298-7570
Customer No. 27160